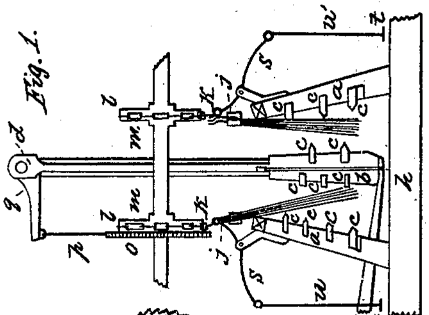
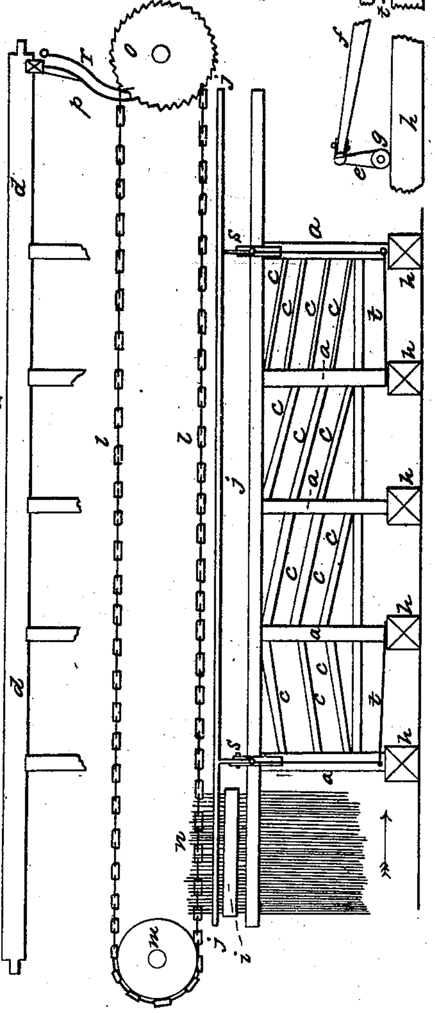
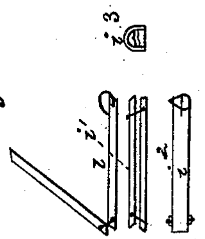
WARNER, MIXSELL & HORN.

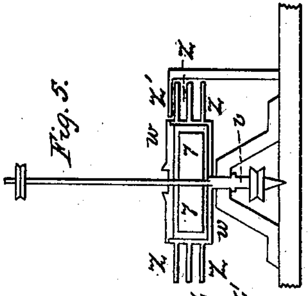
Hackling Machine.

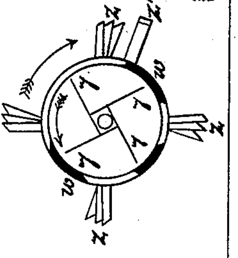
No. 319. Patented July 31, 1837.

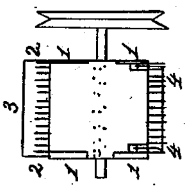


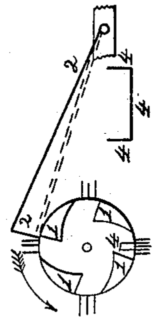












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UNITED STATES PATENT OFFICE.

CHAPMAN WARNER, A. T. MIXSELL, AND E. J. HORN, OF BELVIDERE, N. J.

IMPROVEMENT IN MACHINES FOR BREAKING AND DRESSING HEMP AND FLAX.

Specification forming part of Letters Patent No. **319**, dated July 31, 1837.

To all whom it may concern:

Be it known that we, CHAPMAN WARNER, ABRAHAM T. MIXSELL, and EDWIN J. HORN, of Belvidere, in the county of Warren and State of New Jersey, have invented a new and useful Machine for Breaking, Dressing, and Hatcheling Hemp and Flax; and we do hereby declare that the following is a full and exact description thereof.

The different parts of this machine may be variously arranged, the important point being to give such a disposition thereto as shall render it convenient to pass the material through the successive operations in the same machine in the most rapid manner. The breaking is to be effected by passing the hemp or the flax between brakes or beaters consisting of a framework of slats, which is represented in section in Figure 1, a front view of one of the frames being shown in Fig. 2. These frames are three in number, two of them being stationary and the third vibrating between them.

a a, Fig. 1, are the two stationary frames, and *b b* the vibrating frame between them.

c c c, Figs. 1 and 2, are the slats, which are fixed obliquely in their frames, in order that they may strike a different part of the hemp or the flax as it is moved along the machine. The slats on the vibrating frame *b b* are so arranged as to strike into the spaces between those of the stationary frames. The vibrating frame is usually hung, like the lathe of a loom, by gudgeons on its top rail, *d*, Figs. 1 and 2. It is made to vibrate by the crank *e*, to which the connecting-rod *f* is attached. *g* is a section of the crank-shaft; *h h*, the bottom or floor timbers.

The hemp or flax is to be held in clamps composed of two strips hinged together at one end and having a clip or clasp at the other. This clamp is shown in different positions at $i\ i'\ i^2\ i^3$, Fig. 4, and as containing the hemp and in use at *i*, Fig. 2.

j j, Figs. 1 and 2, is a rod or bar extending along the machine, there being one over each of the stationary frames, to sustain the clamps charged with the hemp or flax. For this purpose there are hooks *k k* upon the upper sides of the clamps, which clip over and are capable of sliding along the bar or rod. *l l* is a chain or band passing round whirls *m m*, serving to carry the hemp or flax along the machine between the brakes. A wire or catch, *n*, ascends from the clamp to the chain or band, so that when the latter moves on the clamp must move with it.

o is a feed or ratchet wheel upon one of the whirls *m*, and *p* is the feed-hand of this wheel, attached to the arm *q*, projecting from the top rail, *d*, of the vibrating frame, the effect of which arrangement will be to move the hemp or flax upon the bar *j* by the vibration of the vibrating frame.

r is a pawl to check the ratchet-wheel, which remains at rest at the period when the vibrating frame strikes its blow on either side. The double line shown between the two sides *b b* of the vibrating frame represent a partition by which the openings of the slats on either side are closed up, this being an essential feature in its construction, as it serves to draw the air, by its vibration between the slats of the stationary frames, and thereby to free the fibers from between them at every stroke.

The several clamps, charged with hemp or flax, are hung onto the rod or bar *j* by the attendant as near together as may be, there being a row on each side of the vibrating frame, carried along by their respective chains. After the charge of hemp or flax has been completely broken at one end it is reversed in the clamp and the operation repeated, which prepares it for the dressing-knives. To cause the hemp or flax to yield to the blow which carries it between the slats, the rod or bar *j j* is affixed to vibrating levers *s s*, working on fulcra, as shown in the drawings, and borne down by springs *t t*, connected to them by the rods *u u*.

Fig. 5 is a vertical section, and Fig. 6 a top view, of the dressing apparatus, which consists of a hollow drum or cylinder, *w w*, revolving horizontally, having dressing-knives projecting from its periphery and a fan or wind-wheel within it revolving in a direction the reverse of that of the drum, the wind from which passes out through mouths or openings in the periphery of the drum in the spaces between the dressing-knives.

v is the shaft of the drum *w w*, having a whirl on it by which it is made to revolve.

x is the shaft of the fan or wind wheel, having also a whirl on it, the band to which is to be crossed to give the reverse motion to the vanes *y y*. The knives *z z* are in sets of three or more, placed a little in advance of each other, serving to dress the hemp or flax which is still held in the clamp and allowed to hang over the bar or rest z', or rather through slots or openings in the floor or casing under which the revolving drum may be situated, the current of air passing out from the wind-wheel opening the fibers, tending to keep them up against the dressing-knives, and blowing out the shivers, so as to separate them completely from the dressed hemp or flax.

The hatchel consists of a revolving drum set with suitable teeth and its axis being horizontal. The teeth are usually divided into four sets, each set consisting of three rows (more or less) crossing the cylinder from end to end, as shown in Figs. 7 and 8. The ends of the hatcheling-cylinder are notched out or have pieces affixed to them, so as to form cams or guides, as shown at 1 1 1, which serve to raise the vibrating frame 2 2, this frame working upon joints at its outer end. The material to be hatcheled is fed over the cross-bar 3 of this vibrating frame, which, by the operation of the cams or guides, will raise it from and lower it onto the hatchel-teeth, keeping it in the proper direction to be acted upon by them in the most advantageous manner. To clear the tow from between the teeth, rods of iron are bent twice at right angles in a staple-like form, 4 4 4, and are placed between each of the rows of teeth with their two ends pointing toward the axis of the cylinder. These slide freely in and out, being checked when they arrive near to the points of the teeth. As the cylinder revolves these clearers fall against its periphery by their own gravity as they are brought upward, and descend by the same power as they pass below, pushing the tow out before them. Successive hatchels, similar in construction but of increasing fineness, complete this operation.

Having thus fully described all the essential operative parts of our machine, and explained the manner in which it acts, we deem it altogether superfluous to give any more particular description of the bands, whirls, or other gearing by which the respective parts may have motion communicated to them, as these may be varied indefinitely by any competent workman, while the principle of action will remain unchanged; nor have we thought it necessary to give any particular dimensions of the respective parts, as these must be varied according to the power applied, and according as the machine may be intended for hemp or for flax.

What we claim as our invention is—

1. The manner of constructing the breaking apparatus, as herein described, consisting of a vibrating frame of beaters operating between two stationary frames adapted thereto, and having the hemp or flax fed in on each side of the vibrating frame by the aid of clamps carried forward by an endless chain or band.

2. The manner of forming the dressing apparatus, with its knives affixed upon a hollow drum or cylinder, and having a fan-wheel within it operating in the manner and for the purpose set forth.

3. The vibrating frame of the hatcheling apparatus, in combination with the cams or guides, constructed substantially as herein fully made known.

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